

INTERNET	BELL ATLANTIC/NYNEX STANDARD	APPLICANTS' CLAIMS	PETITIONERS' AND COMMENT SUBMISSIONS
	Identify the relevant product markets	<ul style="list-style-type: none"> All Internet services constitute a single market; there is no separate Internet backbone market 	<ul style="list-style-type: none"> Separate markets for: (1) backbone Internet exchange, and (3) Internet access
	Identify the relevant geographic markets	<ul style="list-style-type: none"> Global geographic market for Internet services 	<ul style="list-style-type: none"> Backbone geographic market examine choices on specific
	Identify impact on customer groups: (1) residential customers and small businesses; and (2) medium-sized businesses; and (3) large businesses/government users	<ul style="list-style-type: none"> No discussion 	<ul style="list-style-type: none"> Dominance over Internet backbone adversely affect all users and participants
	Identify the most significant market participants	<ul style="list-style-type: none"> IXCs, cable operators, satellite companies, BOCs, utilities 	<ul style="list-style-type: none"> WorldCom-controlled entities Sprint
	Evaluate the competitive effects of the merger	<ul style="list-style-type: none"> Applicants will not control bottleneck facilities Significant transmission capacity exists Dramatic growth and entry will prevent the merger from having any anti-competitive effects 	<ul style="list-style-type: none"> Combines number 1 and 2 backbone operators Merged entity will control at least 50% or more of Internet backbone Significant risk that merge could discriminate against backbone providers and increase connection fees for customers

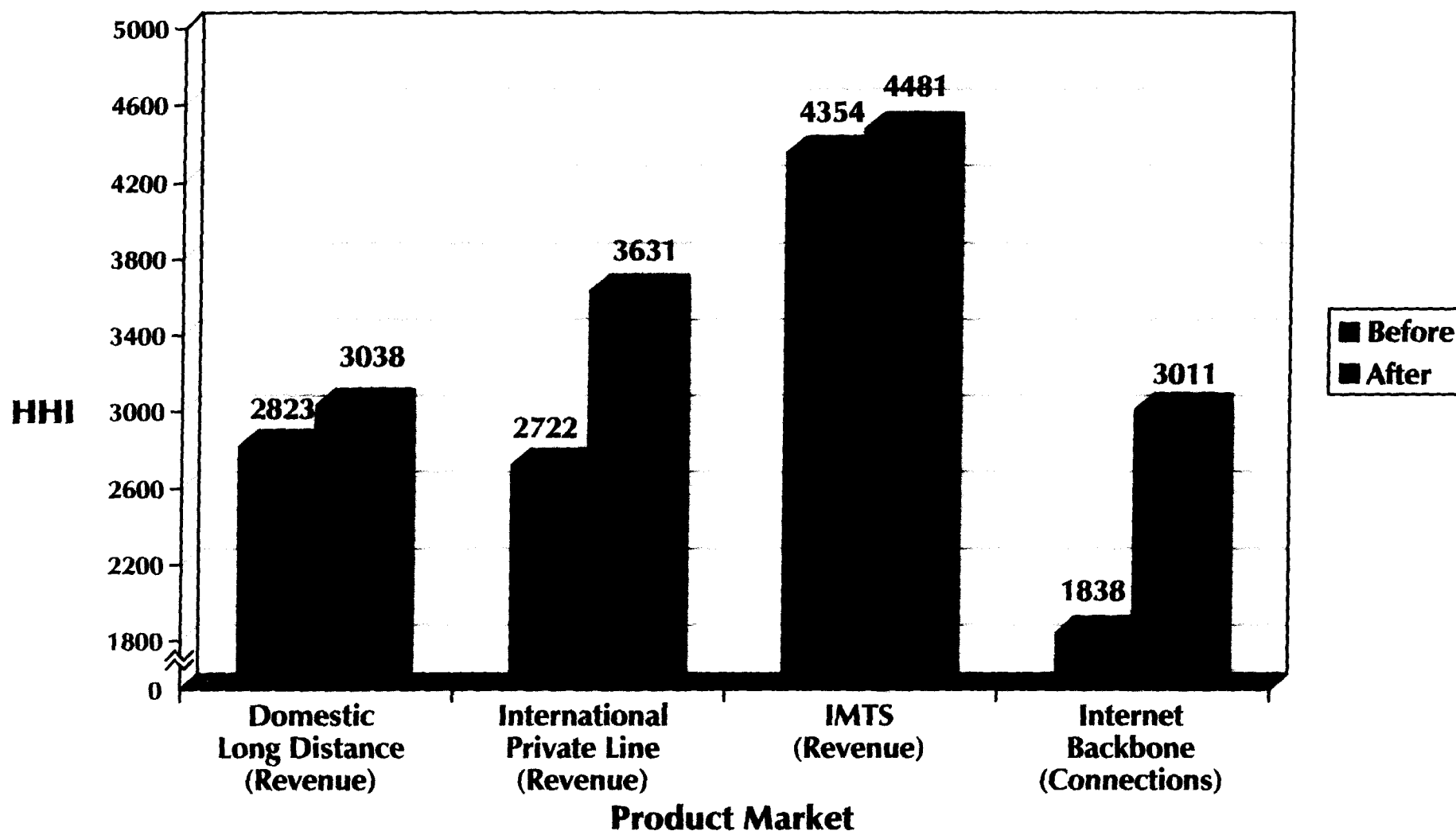
LOCAL EXCHANGE AND EXCHANGE ACCESS	BELL ATLANTIC/NYNEX STANDARD	APPLICANTS' CLAIMS	PETITIONERS' AND COMMENT SUBMISSIONS
	Identify the relevant product markets	<ul style="list-style-type: none"> No discussion, but seems to assume local exchange and exchange access 	<ul style="list-style-type: none"> Local exchange and exchange
	Identify the relevant geographic markets	<ul style="list-style-type: none"> No discussion 	<ul style="list-style-type: none"> Each city where MCI and WorldCom have overlapping existing or facilities
	Identify impact on customer groups: (1) residential customers and small businesses; and (2) medium-sized businesses; and (3) large businesses/government users	<ul style="list-style-type: none"> No discussion 	<ul style="list-style-type: none"> Merger will adversely affect and small business customers
	Identify the most significant market participants	<ul style="list-style-type: none"> No explicit discussion, but cites ILECs as dominant carriers 	<ul style="list-style-type: none"> ILECs, AT&T, MCI, WorldCom

	BELL ATLANTIC/NYNEX STANDARD	APPLICANTS' CLAIMS	PETITIONERS' AND COMMEI SUBMISSIONS
LOCAL EXCHANGE AND EXCHANGE ACCESS (continued)	Evaluate the competitive effects of the merger	<ul style="list-style-type: none"> • Merger will create a strong, aggressive nationwide carrier better able to compete with ILECs • The two companies bring complementary strengths to the merger • There will be no competitive overlap of actual facilities or local operations • Merged company is committed to residential service where economically attractive and assuming favorable FCC actions • Merger will result in significant cost savings and efficiencies 	<ul style="list-style-type: none"> • Significant competitive overlap numerous cites exist • Loss of a competitor in the loc • Cost savings would be at exp local exchange competition • Applicants have announced p abandon reselling local servic residential customers • Commitment to residential lo exchange market questioned

APPENDIX 2

HHI Chart for Long Distance, International Private Lines, IMTS, and Internet Markets

HHI Effects of the Proposed WorldCom/MCI Merger*



- Department of Justice guidelines define HHI over 1800 as "concentrated market"
 - Above HHI of 1800, 100-point increases are deemed "likely to create or enhance market power"
- (* Sources: FCC Long-Distance Market Shares Report; Blake & Lande, 1996 Section 43.61: International Telecommunications Data, January 28, 1998; "Backbone Market Share," Boardwatch Internet Service Providers Directory for Fall 1997, Boardwatch Magazine, 1997, p.6)

APPENDIX 3

Long Distance Affidavit of Robert G. Harris

BEFORE THE FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of

Applications of WorldCom, Inc. and MCI
Communications Corporation for Transfer of
Control of MCI Communications
Corporation to WorldCom, Inc.

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) CC Docket No. 97-211
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Long Distance Affidavit of Robert G. Harris
on behalf of GTE

March 13, 1998

LONG DISTANCE AFFIDAVIT OF ROBERT G. HARRIS

ON BEHALF OF GTE

CC DOCKET No. 97-211

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I. INTRODUCTION

1. NAME AND QUALIFICATIONS

1. My name is Robert G. Harris. I am a Principal in the Law and Economics Consulting Group and Professor Emeritus of Business and Public Policy in the Haas School of Business, University of California, Berkeley. My business address is 2000 Powell Street, Suite 600, Emeryville, CA 94608. I earned Bachelor of Arts and Master of Arts degrees in Social Science from Michigan State University and Master of Arts and Doctor of Philosophy degrees in Economics from the University of California, Berkeley. I currently teach a graduate course in "Telecommunications Economics, Policies and Strategies," and have taught courses at the undergraduate, MBA and Ph.D. levels, in Antitrust and Economic Regulation, Managerial Economics, Business and Public Policy, Competitive Strategy, Transportation and Corporate Governance. For several years, I taught a course on telecommunications economics and public policy to the staff of the California Public Utilities Commission. I have also taught competitive strategy and telecommunications in Executive Education programs for business managers and public officials from the United States and abroad at UC Berkeley and the University of Southern California.

2. My academic research has analyzed the effects of economic regulation and antitrust policy on industry performance, and the implication of changing economics and technology for public policies in transportation and telecommunications. I have published dozens of academic articles on antitrust policy, regulatory policy, telecommunications policy, technological innovation, the economics of telecommunications and transportation, and the development of competition and interconnection policies in local access and exchange services.

3. As an advisor to the U. S. Department of Transportation from 1976-79, I assisted in the drafting of legislation that was passed by Congress in 1980, reforming regulation of the motor carrier and railroad industries. While on leave from the University of California in 1980-81, I served as a Deputy Director for Cost, Economic and Financial Analysis at the Interstate Commerce Commission. At the I.C.C., I was centrally involved in the major rule makings implementing the motor carrier and railroad regulatory reform acts of 1980 and directed the development of the Uniform Rail Costing System. I have also served as a consultant to the U.S. General Accounting Office, the U.S. Office of Technology Assessment, the U.S. Department of Justice, the California Attorney General and the California Department of Consumer Affairs. I recently advised the Economic Planning Agency of Japan on the reform of Japanese telecommunications policies.

4. I have testified on costing methods and principles, pricing principles and rate design, competition policy, interconnection policy and spectrum policy before Federal and numerous state regulatory commissions. Specifically, I have testified on price cap or incentive regulation plans before the Federal Communications Commission and the state commissions of California, Colorado, the District of Columbia, Illinois, Indiana, Kansas, Nevada, Ohio, Pennsylvania, Tennessee, Virginia and Wisconsin. I have also testified before the national telecommunications

regulatory authorities in Canada and Mexico and before the United States Senate, the United States House of Representatives and the Joint Economic Committee of Congress on transportation, antitrust and telecommunications policy issues. My academic articles on antitrust market definition served as the basis for the market definition approach in the Merger Guidelines of the National Association of Attorneys General.

5. I also testified on behalf of the California Attorney General regarding the likely anticompetitive effects of the proposed Lucky/Alpha Beta and Safeway/Vons retail grocery mergers. Although approved by the Federal Trade Commission, the California Attorney General opposed these mergers in Federal District Court because they would have harmed California consumers. The Attorney General succeeded in obtaining preliminary injunctions to prevent consummation of the mergers. Subsequently, one merger was terminated, while the other proceeded only after the divestiture of a significant number of retail outlets. I further testified before the I.C.C. on behalf of the United Pacific Railroad as to the likely anticompetitive effects of the Burlington Northern and Santa Fe railroad merger. This merger was approved only with significant conditions to ensure the preservation of competition, including equal access to track at "regulated" prices.

6. Finally, I have recently testified in New York on behalf of National Communications Association, Inc. (NCA), an interexchange reseller, in its suit against AT&T. I testified that AT&T restricted supply to its resellers in favor of its own commercial customers and that it generally discouraged resale distribution of its services. AT&T was recently found liable of unlawful discrimination against NCA.

7. My professional qualifications are detailed in my curriculum vitae, which is attached as Exhibit 1.

2. PURPOSE AND OVERVIEW

8. I have been asked by counsel for GTE Corporation ("GTE") to evaluate the likely impacts of the proposed merger between MCI Telecommunications Corporation ("MCI") and WorldCom Inc. ("WorldCom"). On the basis of the publicly available data on the merging parties, which is limited, I conclude that the merger is likely to harm both GTE and the nation's consumers, in the broadest sense that consumers and businesses are likely to pay more for their long distance services. More specifically, the proposed merger would occur in an already highly concentrated industry marked by limited competition and significant barriers to entry. Furthermore, the merger would adversely affect one of the industry's primary forms of competition, the wholesale/resale segment. The quality of service enjoyed by the merging parties' consumers is likely to decline, and consumers as a whole would suffer, as the merger would reduce variety and choice in the long distance services market.

9. I have reached this conclusion by examining the breadth and depth of coverage of the facilities-based interexchange networks, of newer "hybrid" carriers such as IXC Communications and of regional "hybrid" carriers such as LCI. My analysis shows that these networks do not have sufficient coverage to ensure workable competition in the supply of interexchange transport.

It would be unfortunate if policymakers were to take at face value the pronouncements that there are many new interexchange carriers which can act as effective competitors, when in fact there are not.

10. I find that there are substantial barriers to entry to provide interexchange service. While entry does occur, it is slow and risky, due to the large extent of sunk assets and the pervasive economies of density in this business. For example, WorldCom has taken more than 5 years to grow from the \$1 billion (in revenue) company it was in 1991 to the point where it can now begin to act as an effective competitor to AT&T, MCI and Sprint. While WorldCom was in its growth phase, the interexchange market was highly concentrated and was characterized by prices above cost. There has been substantial price discrimination and prices net of access charges have risen for a considerable consumer segment. Basic rates have in fact moved relentlessly upwards in a lockstep fashion, and at the very least the three large interexchange carriers have engaged in conscious parallelism, keeping prices substantially above cost. Former executives of these carriers and others have stated on the record that interexchange prices are considerably above any measure of cost. The number of competitors in the interexchange services market *does* matter, and the addition of one substantial competitor can lead to a substantial reduction in prices. The interexchange market is therefore neither workably competitive nor contestable.

11. This merger is likely to raise prices, both by reducing retail competition among the reduced number of firms, and by limiting the growth of the resale channel. Simply put, WorldCom, which has been the most active provider of wholesale interexchange service to resellers, would have less incentive to supply resellers once it acquires MCI's retail customer base. As resellers have been one of the sources of true price competition in the interexchange market, this will hurt both consumers and resellers. In particular, GTE and its nearly 1.7 million long distance customers would be disproportionately affected. From GTE's point of view, there is no good alternative to WorldCom as a provider of network service for resale.

12. In a separate affidavit I find that the merger would have an adverse effect on Internet service and exchange markets. To the eventual detriment of consumers, the proposed merger would create a single, dominant backbone provider with a significant lead over the next largest supplier. The merged company would have the incentive and ability to extract monopoly rents, restrict supply, limit the quality of Internet interconnection, raise rivals' costs and unilaterally dictate the terms of trade across the Internet.

13. I therefore conclude that the merger will harm the competitiveness of interexchange resellers and will lessen the degree of overall competition in interexchange services. I further conclude that the merger will reduce the welfare of consumers that are served by interexchange resellers, of interexchange consumers in general, and of the potential customers who would be denied additional choices in the marketplace. It is unfortunate that MCI and WorldCom have not taken more seriously their obligation to present evidence in support of their merger application. However, it is abundantly clear from the available evidence that this merger would be anticompetitive, which may well explain why MCI and WorldCom have failed to produce such evidence. Therefore, under the public interest standard as developed and applied by this Commission in these matters, this Commission should deny MCI's and WorldCom's merger

application. At a very minimum, this Commission should conduct evidentiary proceedings and compel further production of data that only MCI and WorldCom possess. I am confident that public scrutiny of such data would substantiate my conclusion that this merger will be anticompetitive.

3. METHODOLOGY

14. I have reached my conclusion that this merger is likely to harm consumers by reviewing the available information on the structure of the interexchange industry, the conduct of its participants, and the observed outcomes of such conduct. While I do not believe that there is an automatic link from industry structure to firm conduct, and in turn from conduct to outcomes, I do believe that characterizing industry structure, conduct and performance represents a useful way of classifying the relevant information. My analysis is careful to consider entry barriers, speed of entry, and oligopolistic interactions between participants.

15. My analysis centers on the unique attributes of the interexchange industry. First, like most network industries, the supply of interexchange services is characterized by strong economies of route density. As traffic between two points increases a carrier can use larger increments of capacity (bigger "pipes"), resulting in higher fixed costs but much lower average costs. An entrant will therefore be unable to justify entry in smaller or less dense routes until it has first built up substantial traffic volume. Therefore, when examining competitive effects in the interexchange industry, route coverage must be a focus of the inquiry.

16. Second, there is a crucial distinction between interexchange transport (transmitting a communication between two points) and interexchange network services (providing the ability to transmit a call to all points). Entrants wishing to provide interexchange network services cannot just enter on a number of specific high-density routes, as most telephone users require the ability to make calls to or receive calls from all other telephone users. Entrants may initially construct facilities to provide interexchange transport on the densest routes, but they must buy capacity from their competitors for protracted periods of time to provide interexchange network services. As I show, historically there has not been an alternative path of entry into the interexchange business.

17. It is therefore wrong for WorldCom's and MCI's experts Robert Hall, Dennis Carlton, and Hal Sider to evaluate the effects of this merger by simply adding up all the capacity of competitors, irrespective of physical location. Competitive analysis of interexchange mergers cannot ignore the locational specificity of the underlying facilities, which are routinely taken into account when evaluating railroad, airline or motor carrier mergers. For example, in its analysis of the 1986 Northwest Airlines - Republic Airlines merger, the Justice Department concluded that an effective check on the merged airline's market power could only be exerted by carriers with a major hub at Minneapolis-St. Paul. The Justice Department further concluded that there

was little possibility for the creation of a major new hub at that airport within 2 years, therefore rejecting the likelihood that the combined airline could be effectively disciplined.¹

18. The need for entrants to purchase capacity or transport from incumbents is at the heart of the likely anticompetitive effects of this merger. The MCI-WorldCom combination will limit competition by reducing the degree of access on these less dense routes. With a functioning wholesale market for capacity, there will be an unbroken chain of substitution -- entrants can improve their average cost position as their traffic volume grows on a particular route. At first entrants will buy wholesale minutes of use. They then move to leased DS-1s, leased DS-3s, leased dark fiber, and finally, they move to fully-owned facilities. Prices move down this continuum as capacity moves up. When capacity on these less dense routes is restricted, entrants will receive much less favorable terms, and they will also receive less advantageous terms vis-à-vis the incumbents' retail customers. Additionally, suppliers of interexchange services need to cooperate with each other in the provision of signaling and in network protection agreements. By increasing the degree of asymmetry between firms in the industry, this merger will likely lessen such cooperation.

19. Finally, the merger is likely to have pernicious effects on new entry. WorldCom is currently a leading supplier of wholesale network services and capacity to current entrants (such as GTE and out-of-region Bell Companies) and prospective entrants (such as the Bell Companies after §271 approval), offering appealing terms and conditions not matched by the "Big Three" carriers (AT&T, MCI, and Sprint). WorldCom's incentives to supply capacity to current and prospective competitors would be significantly altered by the merger once it combines with MCI's substantial retail base. If the merger were to happen, entrants may well face higher prices and worsened conditions when renewing their WorldCom contracts. Therefore, the merger would not only increase current concentration but also would slow the rate of entry in an already highly concentrated industry.

4. ANTITRUST ENFORCEMENT

20. Interexchange regulation has been significantly scaled back with AT&T's non-dominance reclassification and the detariffing of interstate rates. On their own, these deregulatory actions would be in the public interest if the industry were to remain subject to active antitrust scrutiny.

21. The example of other deregulated network industries should serve as a caution. Railroad deregulation led to mergers and excessive concentration on a route-specific basis. Reduced consumer welfare and excess prices have been identified as results of some of these mergers, most notably after the merger between Southern Pacific (SP) and Union Pacific (UP).²

¹ Barry Hawk, "Airline Deregulation After Ten Years: The Need for Vigorous Antitrust Enforcement and Intergovernmental Agreements," *Antitrust Bulletin*, Summer 1989, pp. 267-305.

² Kelley Holland, "Getting Aggressive with Union Pacific," *BusinessWeek*, February 23, 1998, p. 47.

Analogous mergers in the long distance industry are likely to lead to similar results. The SP-UP merger in particular has failed to produce any efficiencies. For example, the inability to integrate the operations support systems (OSSs) of the two rail carriers has had disastrous effects on quality of service and has harmed consumers. This experience shows that claims of efficiency benefits flowing from integration of quite large and dissimilar networks should be carefully reviewed. WorldCom's record at successful integration of acquired networks is mixed at best.

22. Deregulation of the airline industry has allowed larger carriers to dominate certain city-pairs and certain "hubs," with documented anticonsumer effects. Fares from hubs where a carrier has a dominant share can be as much as 12% higher than those in the remainder of its system.³ In many senses, the airline industry behaves in ways similar to that of the long distance industry.

23. In a deregulated environment, organic growth is quite different from growth through mergers of the largest firms. The former can lead to welfare gains through the expansion of a more efficient firm, while the latter can result in welfare losses through reduced competition. In this deregulated environment, this Commission needs to ensure that competition is maintained, so that it can deliver the right performance in terms of better and more varied products at lower, cost-based prices. In local telecommunications, competition has been promoted through the regulation of interconnection, unbundling, and resale. In interexchange services, competition should be promoted by not permitting mergers that would reduce competition, harm consumers, and create the need for more pervasive regulation.

24. I note that the antitrust standards in local services and interexchange services rightly differ. In the case of local services and §271 approval, the focus is on the openness to entry of the local market, as the issue is the approval of *de novo* entry in a vertically related market. In the case of interexchange services, the antitrust standard needs to be higher, as the merger of MCI and WorldCom is primarily a horizontal concentration. Even if the interexchange industry were to be considered competitive before the merger, WorldCom and MCI need to show that the merger will not lessen competition. I believe that the merger applicants have not met this burden, as my review indicates that merger will break the chain of substitution between the various current providers and retard the growth of current and prospective entrants.

II. MARKET SUPPLY

1. RELEVANT SERVICES

25. Interexchange telecommunications is not a simple, homogenous service, but a group of differentiated services that are commonly provided over shared facilities. The simplest service which we think of as basic long distance (or "1-plus") is just one element of an expanding array

³ Severin Borenstein, "Hubs and high fares: dominance and market power in the U.S. airline industry," *RAND Journal of Economics*, Autumn 1989, p. 357.

of interexchange options. As a broad categorization, I distinguish among the following interexchange telecommunications services:

- basic switched voice, including “1+” service, known as Message Telecommunications Service, and basic toll-free service
- private line circuits
- toll-free calling
- enhanced voice services provided by advanced intelligent networks (AIN), including virtual private networks, enhanced toll free, and dynamic routing
- data or packet-switched services, including frame relay, ATM, IP transport

2. REQUIRED INPUTS

26. It takes more than just optical fibers to provide interexchange service. Simply counting fiber-miles is similar to assuming that an ample supply of wheat grain is all that is necessary to make bread. In fact, a functioning interexchange network consists of many layers, of which optical fiber is only the most basic.

27. Fiber optic cables need to be equipped (or “lit”) by installing transmission equipment at approximately 50 mile intervals. Carriers also must install multiplexers and cross-connects to carve the huge capacity (bandwidth) available through fiber optics into usable slices for voice and other services. Additionally, switches are deployed to route calls and assign circuits at various points in the network, and signaling systems and control centers are installed to manage and monitor the network. The combination of switches, signaling, and fiber lines connecting them may be considered to form the “backbone” of an interexchange network.

28. Substantial additional transmission equipment is necessary to provide the connection between the interexchange network backbone and the local networks, where calls originate and terminate. Calls are typically handed off at an interexchange carrier’s point-of-presence (POP), which is the demarcation point between the interexchange carrier and the relevant local exchange carrier (LEC). The interexchange carrier POP may be directly on its fiber backbone, connected to the backbone via owned fiber lines, or indirectly connected via another carrier’s network (purchasing the connection on a minute-of-use basis or on a high-capacity circuit basis). POPs are in turn connected to the access tandems of the LECs through facilities leased either from the LECs themselves or from other carriers, or from facilities owned by interexchange carriers. If the interexchange carrier has sufficient traffic volumes, it often connects directly to individual LEC end offices via high capacity circuits, which again it can lease from the LEC or other carriers, or opt to build itself. In short, POPs are rather like medium-sized airports where small commuter planes feed traffic to the larger commercial jets.

29. Importantly, the average cost of the connections between POPs and the backbone is highly volume sensitive. When a carrier first enters the interexchange business with its own facilities, it will establish POPs in its major service areas and connect them in the most economic way. Initially, this might just involve purchasing the connection on a minute-of-use basis from another network. As the volume of traffic increases between the carrier’s POPs in an area and the backbone, the carrier will move to leasing high-capacity circuits such as DS-1s and

then DS-3s. Costs fall substantially if these circuits are leased with long-term commitments. When traffic on that route reaches sufficient density, the carrier might secure long-term dark fiber leases and add its own electronics to form the connection, or even construct its own fiber line. Average costs per minute of traffic fall substantially with every shift across this continuum from a minutes-of-use connection to owned fiber. Therefore, a facilities-based carrier needs a suitably close POP to compete effectively in a particular area, as otherwise it would have to purchase the connection between its nearest POP and the local exchange carrier on an unfavorable basis.

30. Carriers operating with common channel signaling system 7 (SS7) must further ensure that their SS7 nodes are interconnected with the SS7 nodes of all the carriers with which they wish to interconnect. An interexchange carrier wishing to provide full service from a given market to the rest of the U.S. must therefore ensure that its signaling network is at least interconnected with the signaling nodes of the Bell Operating Companies in each of the states where the BOCs operate, plus the regional signaling nodes of independent local companies such as Sprint, GTE, Frontier and SNET, to name a few. The importance of SS7 connectivity was illustrated by the dramatic failure of an independent SS7 provider's network on February 25, 1998. The provider that experienced the failure was Illuminet, the largest independently owned SS7 network operator in the U.S.,⁴ which provides signaling services to smaller carriers, such as competitive local exchange carrier Teleport Communications Group. A fiber cut in Illuminet's network in Illinois caused problems in its signaling centers in Illinois and South Carolina. As a result, there were widespread outages in New York and Baltimore, affecting customers of Teleport, Bell Atlantic and AT&T. Users losing service included the New York Mercantile Exchange, which had to shut down early for the day, Columbia-Presbyterian Medical Center in New York, and WMAR-TV in Baltimore.⁵

31. Finally, customized software is required to act as a glue between all these pieces of equipment and to provide the functionality that sophisticated users demand. While switch vendors provide basic applications, the Big Three and WorldCom customize and enhance their own applications far beyond this basic level.

32. It must be understood that an interexchange network is essentially a large web of specialized computers. The fiber connecting them is nothing more than a transmission medium, just as silicon is in computers. The quality and features of the network mostly lie in the application software engineered by carrier technicians.

⁴ See Illuminet's promotional material at <http://www.illuminetss7.com/interexc/interexc.htm>, downloaded March 9, 1998.

⁵ "Telephone Outage Halts Trade at New York Merc," *Wall Street Journal*, February 26, 1998. David Kalish, "Phone Outage Stretches Across U.S.," *AP Online*, 02:22 EST February 26, 1998.

3. SUPPLY CHANNELS

33. Beginning with the 1982 AT&T consent decree, the interexchange industry has evolved from one facilities-based carrier to the oligopoly that persists today. AT&T was initially forced to resell its excess capacity (a requirement that actually predates the decree), providing the opportunity for carriers such as MCI, Sprint and WorldCom to enter the market. Using resale as an entry path, these three carriers were able to invest in their own facilities and now, in addition to providing service directly to end-users, they also provide capacity to resellers. MCI was one of the first interexchange carriers to benefit from the availability of AT&T wholesale service, and in a sense, all current long-distance carriers (excepting AT&T) got their start by reselling a facilities-based carrier's capacity. However, AT&T does not provide the same level of capacity for resale as it once did, a trend accelerated by its 1995 reclassification as a non-dominant carrier. I testified earlier this year that AT&T's share of wholesale services provided to resellers fell from 50% in 1992 to 21% in 1994.⁶ AT&T itself predicted in 1995 that its 1996 resale market share would fall again to just over 20%.⁷ Clearly, AT&T doesn't participate in this market to the extent that it once did.

34. Over time, supply markets have developed in which the large facilities-based carriers provide service to end-users and resellers alike. Resellers purchase primary capacity in bulk from facilities-based carriers or hybrids and resell it in smaller packages to the end-user. Providing wholesale service to resellers is known as "provisioning," and it is important to note that retailing long distance services is separate from provisioning. Due to their market position, all resellers necessarily provide retail service. Facilities-based carriers, because they own the actual infrastructure, engage in both provisioning and retailing. Switchless resellers and facilities-based carriers fall at the two extremes of the interexchange supply spectrum. All other carriers – those that own some facilities but also resell service – fall somewhere between pure resellers and pure facilities-based carriers. I refer to these providers as "hybrid" carriers. Firms such as Qwest, LCI and IXC, although they do own some facilities, should be viewed as hybrid carriers.

35. A simple method of classifying carriers is to estimate the proportion of traffic that can be carried entirely over their own facilities (save for interconnection with the local carrier serving the customers). If more than two-thirds of a carrier's traffic is passed entirely over its own facilities, then we can classify it as a full facilities-based carrier. An approximate estimate can be obtained by squaring the percentage of on-net population, *i.e.*, those people residing in a LATA which is served by a POP on the carrier's network. The Big Three and WorldCom are

⁶ Oral Testimony of Robert G. Harris on behalf of National Communications Association in *National Communications Association, Inc. v. American Telephone and Telegraph Company*, 92 Civ. 1735 (LAP), United States District Court, Southern District of New York, January 29, 1998.

⁷ Federal Communications Commission, In the Matter of Motion of AT&T Corp. to be Reclassified as a Non-Dominant Carrier, *Order*, FCC Docket No. 95-427, October 12, 1995, para. 65. Quoting an *Ex Parte* Presentation in support of the Motion.

comfortably above this threshold and thus qualify as facilities-based carriers. Frontier's estimated on-net traffic is only 49% of its total volume, and hence it acts as a hybrid. Other carriers have even smaller estimated on-net proportions, as reported in Exhibit 2.

36. Under this definition, the Big Three and WorldCom are the nation's only facilities-based carriers. In turn, both resellers and hybrid carriers are dependent on the facilities-based carriers for supply. Hybrids' dependence roughly correlates to the level of traffic they must pass over the fully facilities-based networks; owning more proprietary facilities affords a hybrid carrier greater autonomy. Resellers, in the true sense of the word, are completely dependent on the facilities-based carriers.

37. A convenient supply channel analogy involves the "provisioning" and retailing of gasoline. Typically, large, vertically integrated oil companies such as Shell are involved in this process end-to-end, from the oil exploration fields to the operation of retail outlets. The oil company explores, produces and refines crude oil into many products, including gasoline. The company is first the "provisioner" of the oil, as it owns the production facilities. Then, it acts as a retailer, selling the product to the end-user. These supply functions can be separated out and examined. If the company owned only gas stations, it would be an independent retailer, the analog of an interexchange reseller. Such a reseller would be entirely dependent on the owners of the oil production and refining facilities. But, if the retailer also held some drilling rights and owned some refining capacity, it could act as a "hybrid" provider, just as some interexchange carriers do by delivering calls via both proprietary and resold circuits. It is important to note, though, that even as a hybrid provider, the independent gasoline retailer would still depend in part on vertically integrated oil companies, its facilities-based suppliers. Any restriction in capacity for oil production or refinement would be expected to affect the retail supply of gasoline. The interexchange market works analogously: hybrid carriers are still partially dependent on the four facilities-based carriers, limiting their competitive capabilities, and resellers are entirely dependent on them.

38. To summarize and simplify, the interexchange market has a wholesale component (provided by facilities-based carriers and to a lesser extent by hybrid carriers), and a retail component – provided by facilities-based carriers, hybrid carriers and resellers.

4. RELEVANT SUPPLIERS

39. The three largest carriers in the interexchange industry are AT&T, MCI, and Sprint, which each have nationwide facilities-based networks. They all provide branded interexchange services primarily supported by extensive advertising and marketing campaigns. They typically supply interexchange services directly to end-users, both in business and residential segments.

40. WorldCom is considered to be the fourth national facilities-based provider, although it still leases a minimal amount of capacity from any of the Big Three to reach some of the more

remote locations in the U.S.⁸ Given its limited brand name recognition, WorldCom has chosen to avoid the substantial expense of building a mass market brand. Instead, it has pursued a strategy of direct sales mostly to larger businesses, wholesale supply of leased capacity to hybrid carriers, and provision of switched services to resellers. WorldCom has assumed the mantle of industry "maverick" from MCI. MCI has evolved from a market-disrupting upstart in the 1970's to one of the stock oligopolistic providers today. WorldCom, acting as the current "maverick," has helped spur the growth of the interexchange resale segment and its concomitant check on anticompetitive behavior by the Big Three.

41. Smaller hybrid providers such as Qwest, Cable & Wireless, LCI, IXC Communications and Frontier serve only limited portions of the United States with their own switching and transport facilities. These "second-tier" providers rely on resale of the top four carriers' facilities to provide service to areas where their networks do not reach. Each of these second-tier, hybrid networks covers only fractions of the U.S. population with its own facilities. These networks' coverage is illustrated in Exhibits 3 through 5.

42. Regional hybrid carriers such as Cable & Wireless and LCI have their facilities concentrated in particular regions and only offer out-of-region services by leasing capacity and services from other suppliers, as shown in Exhibits 3 and 4. "Sparse" hybrid carriers such as IXC and Qwest focus on hauling traffic on dense routes between major urban areas. For example, Qwest's own network currently reaches only from San Francisco to Columbus, Ohio. These networks do not reach many parts of the country, and they operate relatively few points-of-presence, as shown in Exhibits 5 through 7 for IXC and Exhibits 8 and 9 for Qwest. To be able to provide the appearance of ubiquitous service to their consumers, second-tier carriers therefore need to supplement their networks by leasing capacity and switched transport to reach leased POPs in the many areas that their networks cannot reach directly.

43. Finally, there are more than 800 firms that are classified as resellers because they tend to own relatively few or no facilities. Switched resellers own few switches and little fiber and typically lease capacity from facilities-based providers. My definition of "hybrid" carriers is necessitated by the fact that the distinction between switched resellers and small "facilities-based" providers is minor and often unclear. Switchless resellers own no facilities and depend entirely on reselling services provided by the facilities-based carriers. Excel Communications was the largest switchless reseller in 1996, although it has now become a switched reseller by acquiring some proprietary switching capacity.

⁸ For our purposes, this minimal dependence on resale is not significant enough to qualify WorldCom as a hybrid carrier.

5. GEOGRAPHIC COVERAGE CONSIDERATIONS

a) Understanding Coverage

44. Because interexchange services cannot be shipped like a traditional product, we must examine in particular detail the structure and location of interexchange networks. For example, to be able to offer interexchange service to or from Gettysburg, Pennsylvania, a carrier must either have a network serving Gettysburg or have interconnection arrangements in place with another network already serving Gettysburg. If an interexchange network only serves high density routes between major population centers, it will be relatively insignificant when evaluating competition in less dense areas which are far away from its network. As a practical consequence, the presence of many competitive interexchange suppliers in a high density region such as Washington, D.C., is of little help to consumers in the country's outlying areas such as Maryland's Eastern Shore.

45. Interexchange carriers provide bulk transport for calls that typically originate and/or terminate on the networks of local service providers. Usually, the interexchange carrier is distinct from the local network where the call originates. In this case the interexchange calls from end-users are aggregated and transported by the local service provider to the interexchange carrier's point-of-presence (POP). The reverse process occurs when the interexchange carrier is distinct from the terminating local exchange provider.

46. To serve a particular area, an interexchange carrier must either have a POP in that area or arrange to use another carrier's POP and then transport the call to its own network. In Bell company territories, the interexchange carrier must have at least one POP available to it in each local access transport area (LATA), as Bell companies are currently prohibited from providing originating interLATA transport.

47. If a POP is not available in the LATA, a carrier must incur additional costs to access another provider's POP and its leased transport capacity. Or, the carrier must purchase the transport service to connect to its own network. Thus, the fewer the POPs, the worse the coverage, as higher transport charges are incurred. The economics of POP coverage are reflected in commercially available transport rates for interexchange traffic. These transport rates are differentiated between (a) LATAs where the POP is "on" the carrier's own network ("on-net"), (b) LATAs where the POP is reachable through facilities leased from another carrier, and (c) LATAs where the carrier has no POP at all, and the provider must lease both transport facilities and POP usage from another carrier. The differences in transport rates can be significant, as shown in Exhibit 10. For example, a differential in the transport rate of 1.6¢ per minute (comparing a fully on-net call to a fully off-net call) would amount to over 15% of the retail value of a call (assuming a retail rate of 10¢ per minute).

48. In many cases, however, it is not possible to determine whether a carrier's POP is owned, operated, and directly connected to the carrier network (thus fully "on-net"), or whether it is simply leased from another carrier and connected via leased or switched facilities to its home network (thus being "off-net"). To be conservative, I have assumed all POPs reported by interexchange carriers to be "on-net." This is an upper bound, because in many cases, the POPs

are clearly "off-net." For example, IXC claims 2 POPs in Colorado and 3 POPs in Florida, which are probably all "off-net" leased POPs; IXC does not own a fiber route linking either Colorado or Florida to the rest of the nation, as I have shown in Exhibit 7. Similarly, Qwest personnel claim that it has more than 100 POPs nationwide, although it appears from its own promotional material that more than four-fifths of these POPs are on routes which are not yet operational, as shown in Exhibits 8 and 9.

49. There are complicating dimensions to leasing "off-net" POPs. Primary among these is the loss of operational control over the network, as the carrier which leases access must rely on the underlying facilities-based carrier to provide adequate monitoring and maintenance of the transmission facility. While transport contracts are written to ensure certain levels of service, the leasing carriers are often unable to act quickly on a problem stemming from the underlying carrier's service. It is this loss of control which threatens carriers without an extensive network of "on-net" POPs.

50. I define coverage as the population that resides within LATAs which contain at least one POP. Again, this definition is conservative, as it assumes that one POP is both sufficient and economical to serve a given LATA. In reality, carriers with multiple POPs in a LATA will typically have more traffic to or from that LATA, and therefore have higher-capacity connections between the POP and the backbone which result in a lower average cost per unit of traffic. Additionally, POP deployment typically precedes deployment of fiber facilities. As I have shown, a carrier may establish a POP in a LATA which is off its network, linking it to its backbone initially by purchasing minutes of use from another carrier, and later through leased high-capacity circuits. A POP becomes part of the carrier's backbone only at a later stage, when there is enough traffic to justify construction of a fiber route to it. Nevertheless, and despite these conservative assumptions, measurement on the basis of POPs shows that networks other than the Big Three's and WorldCom's are not capable of providing adequate, workable competition, as they simply do not have sufficient coverage throughout the country.

b) Coverage and Effective Competition

51. I have obtained access to the commonly-used CCMI *Qtel* database, which contains the publicly known POP locations for the major carriers in the United States. I have supplemented this database with publicly available information obtained from other carriers. The supplemental information, however, is highly limited in both detail and quality and appears to be overstated – smaller carriers appear quick to count POPs that are either off-net or not operational, perhaps to reassure investors.

52. Only the four largest interexchange carriers operate networks with national coverage in the continental United States. The Big Three have ubiquitous coverage, with at least a POP in every LATA (a minor exception is Sprint, lacking just a handful in highly rural areas), as shown in Exhibit 2. WorldCom's coverage now reaches approximately 82% of the national population, as shown in Exhibit 11. However, the fact that WorldCom's network still does not have a POP in approximately 90 out of the nearly 200 national LATAs underscores the difficulty of building a new national network, as reported in Exhibit 12. In these 90 or so sparsely populated LATAs

WorldCom relies on POPs and transport supplied by other carriers. In these cases, WorldCom must incur substantial additional cost for "off-net" transport, on the order of 15% or more of the retail value of a call, as previously shown in Exhibit 10. However, WorldCom's interexchange facilities have substantially superior coverage relative to the newer hybrid networks, as already shown in Exhibit 2.

53. Regional hybrid carriers such as LCI and Cable & Wireless, and "sparse" hybrid carriers, such as IXC and Qwest, cannot match the coverage of the largest four interexchange carriers. As shown in Exhibit 2, they have far fewer POPs than the Big Three or WorldCom. Moreover, these alternative networks have significantly less coverage in many states. For example, neither LCI nor Cable & Wireless have any POPs at all in Washington, Colorado, Maine or many mountain states (See Exhibits 3 and 4). Frontier Communications and IXC Communications have a few POPs in these states, but again they do not come close to providing anywhere near WorldCom's breadth of coverage. (See Exhibits 14, 5, and 11 for the respective coverages of these carriers.)

54. New entrants such as IXC Communications and Qwest are not operating or building full national networks comparable to those of the Big Three or WorldCom. First, these networks are quite far from being fully built. For example, many of IXC's declared points of presence in throughout the country appear to be "off-net;" that is, they are not served by fiber lines that it owns and operates itself, as previously shown in Exhibits 6 and 7. Qwest appears to have lit (made operational) only a fraction of its planned "national" network, as shown in Exhibit 9. Qwest's reach would not change significantly even with its proposed acquisition of LCI,⁹ as LCI's facilities are concentrated in the upper Midwest, where Qwest has already built out its network. Second, these new networks are "sparse," in the sense that they are designed to provide bulk transport between large metropolitan areas, with only limited capacity to serve other areas of the country. This can be easily seen in Exhibits 6 through 9. These new networks would therefore need to rely to a considerable extent on the POPs of the Big Three. In other words, the coverage structure of the industry is not likely to change appreciably in the near future.

55. To provide service within a given state, a carrier must have adequate in-state POP coverage. However, it is also crucial for a carrier to provide quality interstate service to ensure that it is competitive within the state. Most customers choose one interexchange provider regardless of where their calls terminate, for although long distance is a national service, it is sold locally. For example, the competition that can be offered by Frontier, currently the fifth largest carrier by revenues, is limited by both its lack of presence in many areas and its relatively inferior network quality, which I address in detail later. LCI and IXC also suffer from a similar lack of national coverage. The competitive effect of other carriers is hampered by similar considerations.

56. The importance of network coverage for assessing competition can be understood by comparing interexchange service to rail shipping or airline service. For example, if Union

⁹ Stephanie N. Mehta, "Qwest is Acquiring LCI," *Wall Street Journal*, March 10, 1998, p. A3.

Pacific were the only rail line serving Denver, then other "national" carriers connecting the East and West coasts via Chicago would provide little relief to rail shippers in Denver. Similarly, if United Airlines were the only airline serving Denver, it would be of little practical consequence that Delta Airlines operates a "national" airline service out of Salt Lake City. Thus, by comparison, carriers such as LCI, Frontier, IXC and Qwest do not currently provide a viable alternative to those resellers (such as GTE) that are marketing interexchange services in almost all states. In the ultimate analysis, all of these smaller networks rely to some extent on the Big Three and WorldCom to provide "national" service. To summarize using the airline analogy, Frontier Communications has about the same odds of competing effectively against AT&T as Frontier Airlines has against United Airlines.

57. In addition, we should consider that some carriers will not be offering services closely substitutable with traditional 1+ voice communications, and therefore have to be treated with caution in antitrust analysis. For example, the merging parties suggest that the Qwest network might have a restraining effect on potential anticompetitive behavior. However, Qwest's ballyhooed 7½¢ per minute rate requires a customer to sign up with a credit card and wait two weeks for activation. Once activated, the customer must dial first a local number, obtain a second dial-tone, dial an identification number and a PIN, and then dial the desired number. Not only is this not comparable to traditional 1+ service, but it's a throwback to the interconnection arrangements before the AT&T divestiture and equal access arrangements, and one wonders how consumers might react to these primitive access arrangements. Even then, I note that Qwest's service is currently available in only 9 cities nationwide.¹⁰ It is not possible to make calls originating in other cities using this arrangement. These considerations suggest that the impact of a network such as Qwest's should be highly discounted for the purposes of this proceeding.

58. Furthermore, other hybrid providers, such as Excel, are highly reliant on the merging parties for an adequate supply of facilities. Excel's principal supplier of wholesale capacity is WorldCom, most of its remaining business goes to MCI, and a very small amount of capacity is delivered by IXC.¹¹ Post-merger, a combined MCI-WorldCom would probably be in a position to dictate price terms to Excel. Similarly, IXC would have a limited impact post-merger, as MCI and WorldCom are both its largest suppliers of raw bandwidth and, at the same time, its largest customers.¹²

59. Carriers with regional or limited networks cannot provide adequate competition to check the anticompetitive effects of the proposed merger. The potential coverage of "new" networks is overstated, as even the most aggressive entrant will take several years to deploy coverage,

¹⁰ Information obtained from call to Qwest's customer service on March 2, 1998.

¹¹ Excel Communications Inc., "Management's Discussion and Analysis of Financial Condition and Results of Operations," *1996 Annual Report on Form 10-K*, February 13, 1997.

¹² IXC Communications, Inc., "Business," and "Management's Discussion and Analysis of Financial Condition and Results of Operations," *Form 10-K for the Fiscal Year Ended December 31, 1996*, March 28, 1997.

through “on-net” POPs, comparable to that of a Big Three supplier or WorldCom. The competitive impact of the “new” networks is further limited, as they often consist of carriers sharing fibers in the same very long-haul cables of other new or existing carriers. For example, Frontier, WorldCom, and GTE have acquired long-term rights to at least 24 fibers each on the new Qwest network. Qwest will retain 48 fibers for its own use.¹³ As such, these four companies are not fully equivalent to four independent suppliers, because all of this competition will be focused on the same very specific and very limited geographical areas, and there is little route diversity between them. (For example, a fiber cut would affect all four operators.) Finally, most new long-haul fiber routes run along existing rights-of-way, typically those of gas pipelines and railways, which can often be quite distant from population centers.

60. Finally, it is important to account for a carrier’s international coverage. International calling is one of the most profitable and fastest growing segments of toll service. Smaller, hybrid carriers are limited in the international segment because of their reliance on the four facilities-based carriers for international services. The Big Three and WorldCom are the only carriers with a large domestic presence that operated international facilities-based service in 1996, the last year for which such statistics were available.¹⁴ The international coverage of hybrid carriers is limited and frequently dependent on the resale of facilities owned by the Big Three and WorldCom.

6. IMPLICATION OF ROUTE STRUCTURE ON NETWORK RELIABILITY

61. Fiber networks are typically constructed as bi-directional rings to maintain connectivity in the event of a fiber break. Networks with spurs, such as Qwest’s and IXC’s, are vulnerable to outages, as all customers on the spur would be cut off in case of a fiber break. Carriers openly recognize the value of alternate routes and route redundancy,¹⁵ and the recent Illuminet disaster stands as testament to the need for redundant and diverse route structures.¹⁶ Taking Qwest’s network (as currently configured) as an example, any fiber break along the route would split the network into two islands. Qwest would then have to rely on capacity from other providers to continue to provide interexchange service. Similarly, any hybrid carrier using Qwest’s network would experience an outage. Thus, Qwest’s “competitors,” who actually use segments of the Qwest network, would be equally hobbled by a fiber break. In other words, merely leasing capacity from another carrier does nothing to improve the quality and competitiveness of the

¹³ Qwest Communications International, Inc., *Prospectus*, July 14, 1997, p. 7. Beth Snyder, “OC-192 barrels down the track,” *internetTelephony*, May 19, 1997, <http://www.internetTelephony.com/archive/5.19.97/STnews.html>.

¹⁴ Federal Communications Commission, *1996 Statistics of Communications Common Carriers*, Table 4.8 (Carriers Filing International Traffic Data For 1996).

¹⁵ Qwest Communications Press Release, *Qwest Announces Diverse Route Between Seattle and Portland*, February 23, 1998, <http://www.qwest.com/pressframe.html>.

¹⁶ *Supra* note 5.